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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,934	12/15/2003	Alex Nugent	1000-1207	3732
<div>7590      05/22/2007</div> <div>Ortiz &amp; Lopez, PLLC P.O. Box 4484 Albuquerque, NM 87196-4484</div>				
			EXAMINER HIRL, JOSEPH P	
			ART UNIT 2129	PAPER NUMBER
			MAIL DATE 05/22/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



<b>Office Action Summary</b>	<b>Application No.</b> 10/735,934	<b>Applicant(s)</b> NUGENT, ALEX	
	<b>Examiner</b> Joseph P. Hirl	<b>Art Unit</b> 2129	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |



### **DETAILED ACTION**

1. This Office Action is in response to an AMENDMENT entered April 16, 2007 for the patent application 10/735,934 filed on December 15, 2003.
2. All prior office actions are fully incorporated into this office action by reference.

### ***Status of Claims***

3. Claims 24-44 are pending in this application.

### ***Request for Information***

4. In accordance with CFR § 1.105, please provide detailed test data, appropriate written description of the meaning of such test data including pictures of test setup to demonstrate that the claimed invention has been reduced to practice. A reply that such information is not available will be considered that the claimed invention has not been reduced to practice.



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***Prior Art Anticipation***

5. Applicant's concept of a liquid dielectric solution comprising a mixture of a plurality of nanoconductors and a liquid dielectric solvent wherein a plurality of nanoconductors are free to move about in a dielectric solution and such solution is disposed between two electrodes is anticipated by Paul M. Adriani and Alice P. Gast in the article entitled "Electric-field-induced aggregation in dilute colloidal suspensions" published in 1990 by the Faraday Discussions of the Chemical Society. The abstract is cited as follows:

Electric-field-induced chain formation in dilute, non-aqueous suspensions of sterically stabilized, 1  $\mu\text{m}$  poly (methyl methacrylate)(PMMA) lattices are investigated. Optical microscopy and digital image analysis provide the chain-length distribution. We find that the particles carry a charge sufficient to inhibit field-induced aggregation. Equilibrium predictions of chain aggregation incorporating a screened Coulombic repulsion and field-induced dipole attraction agree with experimental observations near the onset of aggregation; chain formation becomes diffusion limited above the threshold field strength.

Related to terminology, applicant has not defined the term Nanotechnology.

From the web @ [www.answers.com/nanotechnology](http://www.answers.com/nanotechnology), the following definition was obtained:

Nanotechnology: the science and technology of building devices, such as electronic circuits, from single atoms and molecules.

From Nanotechnology web site created by Dr. Ralph Merkle, the statement is made that the "word nanotechnology has become very popular and is used to describe many types of research where characteristic dimensions are less than about 1,000 nanometers" (micron range). <http://www.zyvex.com/nano/>



Applicant has not defined "nanotechnology" related to a specific numeric scale. However, applicant has made the following size comparison @ specification, page 6, lines 15-18:

Microelectrical nano-size components include transistors, resistors, capacitors and other nano-integrated circuit components. MEMS devices include, for example, micro-sensors, micro-actuators, microinstruments, micro-optics, and the like.

Such definition is entirely consistent with the above cited definitions/intent.

Related to terminology, applicant refers to solvent in the generic sense in the specification, page 25, ¶ 0099, that includes a condition of suspension.

Related to terminology, applicant refers to a liquid dielectric solution without any explicit definition of dielectric. Dielectric means, to one of ordinary skill in the art, a non-conducting or insulating substance which resists passage of electric current, allowing electrostatic induction to act across it. A liquid dielectric solution will inherently have an electric conductance that is less than that when the subject solution has conducting material suspended in it such as the claimed nanoconductors.

Adriani et al. cites the following on page 20, line 1:

Particles having aligned dipoles will aggregate into chains.

Mehrotra et al. in Elements of Artificial Neural Networks cites the nature of neural networks to include a feed forward neural network in Figure 1.15 on page 20; the adaptive linear element of Figure 2.8 with weight adjustments into a summation circuit with a training algorithm identified in Figure 2.9 on page 59. Mehrotra, among others, assert neural networks with layers of nodes feeding with a plurality of connections into a plurality of nodes at the next layer



Therese C. Jordan et al. writing in 1989 in the IEEE, Entitled "Electrorheology" cites a graphic illustration of dipole arrangement in the presence of an electric field in figure 16. on page 867 which was copied from an article published in 1978 by H.A. Pohl, entitled: Dielectrophoresis: The behavior of neural matter in nonuniform fields. Such arrangements follow dipole to dipole aligned to the field between the electrodes. There is no evidence of dipoles forming nodes and dipoles crossing from one chain to other chains as is required in the formation of neural networks. Further, in the cited Coulombic repulsion, such repulsion will prevent extension of dipoles. Additionally, there is no formation of chains to form weights to adjust values at a given node.

The evidence shown in the cited papers demonstrates that the concept disclosed by the applicant and cited below will not function as a neural network:

An electromechanical neural network system based on nanotechnology, comprising: an adaptive synaptic element comprising a plurality of nanoconductors suspended and free to move about in a liquid dielectric solution located within a connection gap formed between at least one pre-synaptic electrode and at least one post-synaptic electrode, wherein said liquid dielectric solution comprises a mixture of said plurality of nanoconductors and a dielectric solvent wherein said liquid dielectric solution possesses an electrical conductance that is less than an electrical conductance of said plurality of nanoconductors suspended in said liquid dielectric solution; a plurality of interconnected nanoconnections associated with said adaptive synaptic element, said plurality of interconnected nanoconnections comprising said plurality of nanoconductors in said liquid dielectric solution, said plurality of interconnected nanoconnections electrically connecting said at least one pre-synaptic electrode to said at least one post-synaptic electrode through said liquid dielectric solution and said plurality of nanoconductors disposed within said liquid dielectric solution; and a voltage mechanism for applying an electric field across said connection gap whereby said electric field induces a dipole in each nanoconductor among said plurality of nanoconductors, thereby aligning said plurality of nanoconductors within said liquid dielectric solution and strengthening or weakening each nanoconnection among said plurality of interconnected nanoconnections according to an application of said electric field across said connection gap,

Adriani et al. and Jordan et al. describe liquid state anticipated equivalents of applicant's electromechanical-based liquid state machine ... albeit without a neural network. Given that the dipoles align as described by Adriani et al. and Jordan et al.



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into chains (and as demonstrated by them), a neural network will not form nor will a trained neural network form ... one simply has chains of varying lengths which by Mehrotra and others is simply not a neural network. In consequence, the prior art conclusively establishes that the invention of the applicant will simply not function as a neural network.

***Claim Rejections - 35 USC § 101***

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 24-44 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. See ¶ 5. above. The neural network that is claimed cannot develop and the whatever network that may develop, cannot function as a neural network because it is not a neural network ... chains are not neural networks.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.



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9. Claims 24-44 are rejected under 35 USC 112, first paragraph because current case law (and accordingly, the MPEP) require such a rejection if a 101 rejection is given because when Applicant has not in fact disclosed the practical application for the invention, as a matter of law there is no way Applicant could have disclosed how to practice the undisclosed practical application. This is how the MPEP puts it:

("The how to use prong of section 112 **incorporates as a matter of law** the requirement of 35U.S.C. 101 that the specification disclose as a matter of fact a practical utility for the invention.... If the application fails as a matter of fact to satisfy 35 U.S.C. 101, then the application also fails as a matter of law to enable one of ordinary skill in the art to use the invention under 35 U.S.C. § 112."); In re Kirk, '376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) ("Necessarily, compliance with § 112 requires a description of how to use presently useful inventions, **otherwise an applicant would anomalously be required to teach how to use a useless invention.**"). See, MPEP 21107.01 (IV), quoting In re Kirk (emphasis added).

10. Therefore, claims 24-44 are rejected on this basis.



***Claim Rejections - 35 USC § 102/§ 103***

11. Claims 24-44 fail to identify an invention (neural network) that can be evaluated under the conditions of novelty or nonobviousness. Since the approach taken using nanoconductors fails to produce a neural network, the claims as written have no basis in reality and cannot be evaluated because the invention doesn't and cannot exist. See ¶ 5. above. If the applicant is not claiming a neural network, then the chains of Adriani and the dipoles of Jordan anticipate the applicant's invention.

***Response to Arguments***

12. Applicant's arguments contained in the Remarks section of the response dated April 16, 2007, pages 11-22 are acknowledged but the basis of rejection of the application has been changed and is now identified in ¶ 5.

***Conclusion***

13. Claims 24-44 are rejected.

***Correspondence Information***

14. Any inquiry concerning this information or related to the subject disclosure



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should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the applicant. Without a written authorization by applicant recorded in the applicant's file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is an example authorization which may be used by the applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,

Customer Service Window,

Randolph Building,

401 Dulany Street,



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Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll free).



Joseph P. Hirl  
Primary Examiner  
May 17, 2007